

SR20 / Sharpes Corner Need Statement

The SR 20, Sharpes Corner vicinity (MP 47.24 – 48.40 & 48.40 SP) experienced a total of 120 collisions in the 5 year period between 2011 and 2015 including 1 fatality, 2 serious injuries and 42 injuries. Rear end collisions are the predominant crash type, accounting for 49% of all collisions, followed by striking fixed objects (13%) and enter at angle (13%). Three of the four intersections within these limits are operating at LOS D or worse during the PM peak hour and left turn queuing at the SR20/SR20 Spur intersection regularly extends beyond the available storage.

Safety Needs

Sharpes Corner

The SR20/SR20 Spur (aka Sharpes Corner) intersection experienced 63 collisions within the 2011-2015 time period including 2 serious injury and 20 injury collisions. Rear-end collisions (40) are the predominant collision type. Analysis using the Highway Safety Manual procedures indicates that the Sharpes Corner intersection is experiencing ~61% more total collisions and ~62% more fatal & injury collisions than a typical urban 3-leg signal.

SR20/Miller/Gibraltar

The SR20/Miller/Gibraltar intersection has experienced 4 collisions in the 5 year period including 2 injuries. One of the injury collisions was fatal. Although the intersection is not experiencing an above expected amount of collisions, the fatal event, high speeds of SR20 and the frequent use of this intersection by school buses and parents transporting children to/from Fidalgo Bay Elementary support an evaluation of potential safety improvements.

Mobility Needs

Sharpes Corner

Under existing conditions (2015), during the PM peak hour, the Sharpes Corner intersection operates at LOS D with an average Delay of 35 sec/veh. The available storage for left turns toward Whidbey Island is regularly exceeded by high volumes of vehicles and travelers are often forced to use the paved shoulder for queuing. During the summer months as volumes increase, travelers frequently wait through 3 or more light cycles and queueing as far as ½ mile is not uncommon.

SR20/Miller/Gibraltar

The side legs (Miller Rd. & Gibraltar Rd) of this intersection currently experience significant delays during the PM peak hour. Miller Rd operates at LOS F and vehicles are experiencing 94 seconds of delay. Gibraltar Rd operates at LOS C and vehicles are experiencing 18 seconds of delay. The LOS of the side legs at this type of intersection are largely influenced by gaps in mainline volumes. As SR 20 volumes continue to grow, the LOS conditions on these two approaches will further degrade.

Contributing Factors

SR20 Sharpes Corner Intersection Improvements XL4998

SR20 / SR20 Spur Intersection (Sharpes Corner)

- Downhill going nb into intersection raises speed going into intersection.
- Short merge lanes for nb to eb movement and nb to wb turning movement.
- 55 mph on east and west legs, 50 mph posted speed on south leg.
- No separation or barrier between wb to sb turn lane stopped and wb through lanes that are going 55 mph.
- Three lane merge for eb traffic on S Fidalgo Bay Rd, eb SR20 Spur, and wb SR20 making simultaneous turns onto sb SR20.

SR20 / Miller Road / Gibraltar Road Intersection (Howard's Corner)

- Not enough gaps in traffic on SR20 to make left turn out of Gibraltar Rd onto SR20 creates long queues on Gibraltar Rd.
- SR20 contains a number of turn lanes. Drivers turning left or right onto SR20 need to verify those lanes are clear.
- Despite posted speed, larger vehicles are likely to slow sb traffic on SR20 into this intersection due to 6% uphill sb grade into the intersection.

Alternative Determination History

SR20 Sharpes Corner Intersection Improvements XL4998

Preliminary Work

Prior to the first open house, the designers met to brainstorm the various solutions that would likely fit within the budget. After that, designers, traffic engineers, and area managers met for a larger brainstorming session to produce a list of potential solutions, to present at the first open house, and from which some alternatives may be chosen.

Two informal public meetings were held to present ideas and ask the public for feedback about the project. At the first public meeting, January 18, 2016, the following ideas were presented on various diagrams to help consider which ideas should be seriously considered.

SR20 / SR20 Spur Intersection (Sharpes Corner)

- Two lane roundabout.
- Two signalized left turn lanes (westbound to southbound) and one through lane.
- Two signalized left turn lanes (westbound to southbound) and two through lanes (one with a merge with traffic turning northbound to westbound).
- RCut: Two signalized left turn lanes, westbound to southbound, combined with a Restricted Crossing Right Turn (RCut) for the left turn, northbound to westbound. Traffic must first turn right and go to Marches Point Road to perform a U-Turn movement. This reduced the signal to two phases as well as increasing the amount of traffic that can make the left turn in one phase of the light.

SR20 / Miller Road / Gibraltar Road Intersection (Howard's Corner)

- Right turn lane from Gibraltar Road onto SR20
- Single lane full roundabout
- Single lane compact roundabout (using existing roadway prism)

Fidalgo Bay Road

- Barrier placed to block the left turns from westbound SR20 Spur onto Fidalgo Bay Road.

Bicycle / Pedestrian

- A general diagram showing a pathway between Marches Point Road and Sharpes Corner on the south side of SR20 along the north edge of the golf course. This connected to a crosswalk on the south leg of the Sharpes Corner Roundabout.

Follow up to the First Public Meeting

Sharpes Corner: The idea of adding a second turn lane with two nonstop through lanes was eliminated because the public did not like the merging still required. It was also determined that only a single lane is needed if no merge is required.

Sharpes Corner: The Rcut idea was eliminated simply due to lack of support from the public to drive to Marches point to make a left turn.

Miller / Gibraltar Road / SR 20 intersection: All ideas were abandoned except the full roundabout option. This was because the right turn solution wouldn't provide any significant safety improvement and the compact roundabout was too small to provide a U-turn, which we wanted to utilize to provide access control between Sharpes Corner and the Miller / Gibraltar Road intersection.

Summary

Two alternatives were created that are corridor solutions for the entire project, not necessarily focused on one intersection alone. Traffic analysis was performed on them. Animations of traffic at current (year 2015) volumes for the Sharpe's corner intersection were shown to the public at the second public meeting on March 17, 2016. These are the two alternatives that were considered and evaluated in this BOD.

After the second public meeting we felt it was necessary to check whether there were any signal warrants at the Miller / Gibraltar intersection. Warrant 1A was not satisfied, warrant 1B was satisfied. At 50 mph this is still not sufficient to warrant placing a signal there. Therefore, to help make a decision whether to pursue making a signal a legitimate alternative, the traffic group compared the proposed roundabout with the proposed signal. Both would have two southbound through lanes. The analysis was done for the design year volumes, plus an additional 20% to heavily load the simulations. This yielded a total intersection level of service A for the roundabout and total intersection level of service B for the signal. Therefore we did not include a signal as an alternative at Miller / Gibraltar. See the other parts of the BOD for more information about this intersection.